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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PUENTE, EMERSON C

ART UNIT PAPER NUMBER

2184

DATE MAILED: 08/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/721,064

Applicant(s)

TALAGALA ET AL.

Examiner

Emerson C Puente

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 14-18, 21, 22, 26-28 and 30 is/are rejected.
- 7) ☒ Claim(s) 12, 13, 19, 20, 23, 25 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Claims 1-30 have been examined.

Claim Objections

2. Claims 9 and 24 objected to because of the following informalities:

In regards to claim 9, please change "as recited in claim **9**" to "as recited in claim **8**".

In regard to claim 24, please change "the **filed** replaceable storage unit" to "the **field** replaceable storage unit"

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1,6,15,16,18,21,22,24,26,28, and 30 are rejected under 35 U.S.C. § **102(b)** as being clearly anticipated by US Patent No. 5,742,792 of Yanai et al. referred hereinafter "Yanai".

In regards to claim 1, Yanai discloses:

a processor (see figure 1 item 34 and column 6 lines 15-20);

a system memory coupled to said processor (see figure 1 item 28 and column 8 lines 1-5);

a network interface for connecting to a network (see figure 1 item 26 and column 7 lines 60-65);

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one or more drive controllers coupled to the processor (see figure 1 item 16 and column 7 lines 60-65); and

an array of disk drives coupled to said one or more drive controllers and configured to be organized into one or more RAID logical volumes and presented to client machines as one or more filesystems through said network interface (see column 14 lines 7-24)

wherein said processor, said system memory, and said network interface, said one or more drive controllers, and said array of disk drives are packaged as a single field replaceable unit (FRU) so that said processor, said system memory, said network interface, said one or more drive controllers, and said array of disk drives are configured not to be individually field replaceable. Yanai discloses a remote mirroring data storage system, wherein if one fails or needs to be replaced, the other data storage system takes its place, indicating an array of disk drives, processor, system memory, network interface and one or more drive controllers are configured not be individually field replaceable since a whole data storage system is replaced by another when it fails (see column 14 lines 40-50).

In regards to claim 6, Yanai discloses wherein said array of disk drives are configured to provide storage for at least a quarter of a terabyte of data in said single field replaceable unit (see column 12 lines 47-55).

In regards to claim 15, Yanai discloses a system comprising:

A single field replaceable unit (FRU) comprising:

one or more processors (see figure 1 item 34 and column 6 lines 15-20);

a network interface coupled to said one or more processors (see figure 1 item 26 and column 8 lines 1-5); and

an array of disk drives coupled to said one or more processors and said network interface, wherein said array of disk drives is configured to be provided as one or more filesystems through said network interface (see column 14 lines 17-24);

wherein said processor, said network interface, and said array of disk drives are configured not to be individually field serviceable or field replaceable (see column 14 lines 40-50);

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a network coupled to said network interface of said single field replaceable unit (see figure 1 items 18, 58, 60 and column 7 lines 45-60 and column 9 lines 6-15);

one or more client machines coupled to said network and configured to access over said network said one or more filesystems provided by said array of disk drives within said single field replaceable unit (see figure 1 items 12, 52, 56 and column 7 lines 45-60 and column 9 lines 6-15);

In regards to claim 16, Yanai discloses wherein said array of disk drives within said single field replaceable unit are configured into RAID logical volumes (see column 14 lines 7-14)

In regards to claim 18, Yanai discloses wherein said single field replaceable unit is configured to provide storage for at least a quarter of terabyte of data (see column 12 lines 47-55).

In regards to claim 21, Yanai discloses a storage rack having multiple ones of said single field replaceable unit coupled together over said network. Yanai states the current use of storage devices wherein secondary "mirrored" storage devices are located on or within the same physical confines of the main storage device (see column 1 lines 45-50)

In regards to claim 22, Yanai discloses:

assembling a processor, network interface and array of disk drives as a single field replaceable unit (FRU) so that said processor, said network interface, and said array of disk drives are configured not to be individually field serviceable or field replaceable, and wherein said processor, said network interface, and said array of disk drives are configured to provide one or more filesystems to client machines through said network interface (see column 14 lines 40-50);

preinstalling software on said single field replaceable unit configurable to organize said array of disk drives into one or more RAID logical volumes to be presented to client machines as one or more filesystems through said network interface. Yanai discloses RAID storage system, thus it would be inherent to preinstall software on a single field replaceable unit in order to organize said array of disk drives in one or more RAID logical volumes (see column 14 lines 5-14);

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after said assembling and said preinstalling, shipping said single field replaceable unit to a user. It would be inherent after assembling and preinstalling, to ship said field replaceable unit in order for the user to receive the unit; and

replacing said single field replaceable unit as a whole upon failure, wherein said single field replaceable unit has no serviceable internal parts (see column 14 lines 40-50);

In regards to claim 24, Yanai discloses providing computer resources, comprising:

configuring a plurality of field replaceable storage units in an enclosure. Yanai states the current use of storage devices wherein secondary "mirrored" storage devices are located on or within the same physical confines of the main storage device (see column 1 lines 45-50),

wherein each field replaceable storage unit comprises an array of hard drives and is configured to make the hard drives available on a network (see figure 2 item 10, 20 and column 7 lines 50-60)

detecting a failure in one of the field replaceable storage units (see column 14 lines 40-50);

replacing as a whole the field replaceable unit having the failure (see column 14 lines 40-50);

In regards to claim 26, Yanai discloses wherein the array of hard drives within field replaceable storage units is configured into RAID logical volumes (see column 14 lines 7-14).

In regards to claim 28, Yanai discloses wherein said single field replaceable unit is configured to provide storage for at least a quarter of terabyte of data (see column 12 lines 47-65).

In regards to claim 30, Yanai discloses a system comprising:

an enclosure configured to hold a plurality of individual field replaceable storage units. Yanai states the current use of storage devices wherein secondary "mirrored" storage devices are located on or within the same physical confines of the main storage

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device (see column 1 lines 45-50), wherein each individual field replaceable storage unit comprises:

one or more processors (see figure 1 item 34 and column 6 lines 15-20); and

an array of disk drives coupled to said one or more processors, wherein said processor and said array of disk drives are configured to provide one or more filesystems to a network (see column 14 lines 7-24)

wherein said enclosure is configured so that each individual field replaceable storage unit is individually removable or insertable, wherein each individual field replaceable unit is configured so that said one or more processors and said array of disk drives are configured not to be individually field serviceable or field replaceable so that failed one of said individual field replaceable storage units are replaced in said enclosure as a whole.(see column 14 lines 40-50).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yanai in further view of US Patent No. 5,682,509 of Kabenjian et al. referred hereinafter "Kabenjian".

In regards to claim 2, Yanai fails to explicitly disclose a unit further comprising a motherboard, wherein said processor, said system memory, said network interface, and said one or more drive controllers, and said array of disk drives are attached to said motherboard so as not to be field replaceable

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However, Kabenjian discloses the processors, system memory, network interface, and said one or more drive controllers attached to the motherboard (see figure 2 items 126, 120, 121, 131).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a unit further comprising a motherboard, wherein said processor, said system memory, said network interface, and said one or more drive controllers, and said array of disk drives are attached to said motherboard so as not to be field replaceable. A person of ordinary skill in the art would have been motivated to make the modification because Yanai discloses the coupling of processors, memory, network interface, and controllers, and a motherboard, as per teaching of Kabenjian, provides a means to connect the components.

7. Claims 3, 4, and 7 are rejected under 35 U.S.C. § **103(a)** as being unpatentable over Yanai in further view of US Patent No. 5,812,754 of Lui et al. referred hereinafter "Lui".

In regards to claim 3, Yanai fails to explicitly disclose one or more fans configured to flow air over said array of disk drives and said processor, wherein said one or more fans are packaged as part of said single field replaceable unit and are configured not to be individually field serviceable or field replaceable.

However, Lui discloses a RAID system including one or more fans and configured to flow air over said array of disk drives and said processor (see figure 7 and column 3 lines 50-55)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have one or more fans configured to flow air over said array of disk drives and said processor, wherein said one or more fans are packaged as part of said single field replaceable unit and are configured not to be individually field serviceable or field replaceable. A person of ordinary skill in the art would have been motivated to make the modification because fans would provide cooling for the data storage system, as per teaching of Lui.

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In regards to claim 4, Lui discloses wherein said one or more fans comprise a row of fans positioned between array of disk drives and said processors (see figure 7).

In regards to claim 7, Yanai fails to disclose a power supply configured to supply power to said processor, said system memory, said network interface, said one or more drive controllers, and said array of disk drives, wherein said power supply is part of said single field replaceable unit and is configured not to be individually field serviceable or field replaceable.

However, Lui discloses a power supply configured to supply power to said processor, said system memory, said network interface, said one or more drive controllers, and said array of disk drives, (see figure 7 and column 3 lines 50-55)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to a power supply configured to supply power to said processor, said system memory, said network interface, said one or more drive controllers, and said array of disk drives. A person of ordinary skill in the art would have been motivated to make the modification because a power supply, as per teachings of Lui, would supply power to the storage system, enabling the storage system to function.

8. Claims 5, 17, and 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yanai in further view of Microsoft Computer Dictionary 3rd edition referred hereinafter as "Microsoft".

In regards to claims 5, 17, and 27, Yanai discloses eight disk drives (see column 12 lines 47-56)

However, Yanai fails to disclose wherein said one or more drive controllers comprise four ATA-type drive interfaces, and wherein said array of disk drives comprises eight ATA-type disk drives.

Microsoft discloses ATA as type of disk drive which reduces interface cost and making firmware implementation easier (see page 34 "ATA/IDE hard disk drive").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have one or more drive controllers comprise four ATA-type drive interfaces, and wherein said array of disk drives comprises eight ATA-type disk drives.

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A person of ordinary skill in the art would have been motivated to make the modification because ATA type disk drives reduces interface cost and further makes firmware implementation easier, as per teaching of Microsoft.

9. Claims 8-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yanai in further view of US Patent No. 5,996,054 of Ledain et al. referred hereinafter "Ledian"..

In regards to claims 8, Yanai fails to disclose wherein said processor is configured to execute a UNIX-type operating system and present said array of disk drives as a Network File System (NFS) or Common Internet File System (CIFS) filesystem to a network through said network interface so that the filesystem can be mounted by client machines

However, Ledian discloses using UNIX type operating system that presents said array of disk drives as a NFS to a network through said network interface so that the filesystem can be mounted by client machines (see column 8 lines 35-45 and column 23 lines 35-65)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to execute a UNIX-type operating system and present said array of disk drives as a Network File System (NFS) or Common Internet File System (CIFS) filesystem to a network through said network interface so that the filesystem can be mounted by client machines. A person of ordinary skill in the art would have been motivated to make the modification because UNIX-type operating system is a widely known and used operating system that are freely and commercially available, as per teaching of Ledian (see column 8 lines 35-45).

In regards to claim 9, Ledian discloses a UNIX-type operating system, indicating the filesystem is configured to be accessible by UNIX clients.

In regards to claim 10, it is known that LINUX is a version of UNIX, indicating Ledian discloses wherein said processor is configured to execute a Linux-type operating system and present said array of disk drives as a Network File System (NFS) or

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Common Internet File System (CIFS) filesystem to a network through said network interface so that the filesystem can be mounted by client machines

In regards to claim 11, Ledian discloses a UNIX-type operating system, indicating the filesystem is configured to be accessible by UNIX clients.

10. Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent No. 5,663,868 of Stalley et al. referred hereinafter "Stalley".

In regards to claim 14, Yanai fails to disclose wherein said single field replaceable unit is configured to be rack-mounted and has a height less than or equal to 1.75 inches.

However, Stalley discloses standard dimension for cabinets stacked vertically is in multiples of 1.75 inches (see column 1 lines 10-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have each single field replaceable unit configured to be rack-mounted and has a height less than or equal to 1.75 inches. A person of ordinary skill in the art would have been motivated to make the modification because a rack mount wherein each unit has a height of 1.75 inches is an internationally agreed dimensions, thus being a standard, as per teaching of Stalley (see column 1 lines 10-15).

Allowable Subject Matter

11. Claims 12,13,19,20,23,25 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

See Form PTO-892.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Emerson Puente, whose telephone number is (703) 305-8012. The examiner can normally be reached on Monday-Friday from 8:00AM- 5:00PM, first Fridays off.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Robert Beausoliel*, can be reached on (703) 305-9713 or via e-mail addressed to [*robert.beausoliel@uspto.gov*]. The fax number for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [**emerson.puente@uspto.gov**].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 305-3900.

Emerson Puente
8/18/03


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